

SCIENCE

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AFRICAN AND AMERICAN: THE CONTACT OF NEGRO AND INDIAN.¹

THE history of the negro on the continent of America has been studied from various points of view, but in every instance with regard alone to his contact with the white race. It must be, therefore, a new, as well as an interesting, inquiry, when we endeavor to ascertain what has been the effect of the contact of the foreign African with the native American stocks. Such an investigation, to be of great scientific value, in the highest sense, must extend its lines of research into questions of physical anthropology, philology, mythology, sociology, and lay before us the facts which alone can be of use. So little attention has been paid to our subject, in all its branches, that it is to be feared that very much of great importance can never be ascertained; but it is the object of this essay to indicate what we already know, and to point out some questions concerning which, with the exercise of proper care, valuable data may even yet be obtained.

It is believed that the first African negro was introduced to the West Indies between the years 1501 and 1503; and since that time, according to Professor N. S. Shaler,² there have been brought across the Atlantic not more than "three million souls, of whom the greater part were doubtless taken to the West Indies and Brazil." Professor Shaler goes on to say, "It seems tolerably certain that into the region north of the Gulf of Mexico not more than half a million were imported. We are even more at a loss to ascertain the present number of negroes in these continents: in fact, this point is probably indeterminable, for the reason that the African blood has commingled with that of the European settlers and the aborigines in an incalculable manner. Counting as negroes, however, all who share in the proportion of more than one-half the African blood, there are probably not less than thirty million people who may be regarded as of this race between Canada and Patagonia." Such being the case, the importance of the question included in the programme of investigation of the Congrès des Américanistes — "*Pénétration des races africaines en Amérique, et spécialement dans l'Amérique du Sud*" — becomes apparent, and no insignificant part of it is concerned with the relations of the African and the native American.

It was said that we start with 1503 or thereabouts. Of course, some imaginative minds have discovered negroes in America at a period long antedating this; but such is theory, not fact. What the curious sculptured faces in Central American ruins signify, we cannot at present determine. Enthusiastic missionaries have spoken of negroes in Labrador,³ and Peter Martyr (third decade) tells of negroes taken prisoners in the battle between the Spaniards and Quaragua in 1513. He states,⁴ "About two days' journey distant from

Quaragua is a region inhabited only by black Moors sailed thither out of Ethiopia, to rob, and that by shipwreck, or some other chance, they were driven to these mountains." Washington Irving thinks that Martyr was retailing the "mere rumor of the day," and, as other historians do not refer to the subject, considers that the belief "must have arisen from some misrepresentation, and is not entitled to credit." Fontaine says,¹ "Nunez, in coasting along the shores of the Gulf of Darien, discovered a colony of woolly-headed black people, who had settled among the copper-colored inhabitants of the mainland." This colony, too, must be relegated to the land of fiction and romance. Nor is it the only instance of the kind. Dr. A. R. Wallace states that the Juris of the Rio Negro, who are "pure, straight-haired Indians," are down in some maps as "Juries, curly-haired negroes." And not a little misconception has been caused by such broad statements as that of Col. Galindo:³ "The Carib is identical in outward appearance with the African negro."

Having thus cleared the way a little, let us take up the consideration of our subject ethnographically. We may begin with Canada. Although the Maroon settlement in Nova Scotia, near Halifax, existed for a number of years (before the removal to Sierra Leone), and remnants of it are still to be found there, there appear to be no records extant attesting contact with the Indian aborigines. Mr. J. C. Hamilton, M.A., LL.B., of Toronto, who has devoted much time to the study of the "African in Canada," is the writer's authority for the statement that on one of the Iroquois reservations in Ontario considerable intermixture with the negro had taken place.⁴ This opinion is confirmed by Odjidjatekha, an intelligent Mohawk of Brantford, who states that the Tuscarora reserve near that city is the one in question. It has often been asserted that the celebrated Joseph Brant was a slave-holder; but this has been denied by his friends, who assert that he merely gave shelter to refugee negroes, who were rather in the relation of dependents than of slaves. One frequently comes across passages like the following:⁵ "Some Mohawk Indians and a negro of Brant's;" and some such state of affairs would be necessary to account for the present admixture of negro blood. Mr. Hamilton also informed the writer that Mr. George H. Anderson of Toronto, a United States pensioner, and a native of Maryland, claims that his mother's mother was a full-blooded Indian. There is also a case of negro-Indian intermixture reported from British Columbia.

In New England, especially in Massachusetts, considerable intermingling of African and Indian appears to have occurred. The earliest mention of negro slaves in the Bay State is in 1633, and a very curious entry it is. Wood⁶ tells

¹ How the World was Peopled, p. 163.

² A Narrative of Travels on the Amazon, etc. (new ed., London, 1889), p. 355.

³ Journal of the Royal Geographical Society, vol. iii. 1834, p. 291.

⁴ See "The African in Canada" (Proceedings of the American Association for the Advancement of Science, vol. xxxviii., 1889, pp. 364-370); "The Maroons of Jamaica and Nova Scotia" (Proceedings of the Canadian Institute, 3d series, vol. vii. 1890, pp. 260-269); also Transactions of the Canadian Institute, vol. i. (1890-91), p. 107.

⁵ Zeisberger's Diary (Ed. Bliss, 1885), p. 316, under date of June, 1793.

⁶ New England Prospect (1634), p. 77, cited in WILLIAMS'S History of the Negro Race in America, 1883, vol. i. p. 173.

¹ Paper read before the Canadian Institute, Toronto, Jan. 24, 1891, by A. F. Chamberlain, M.A., fellow in anthropology in Clark University, Worcester, Mass.

² "The African Element in America" (The Arena, vol. ii. p. 636).

³ CHARLEVOIX, Hist. et Descript. générale de la Nouvelle France, 1744, pp. 17, 18.

⁴ IRVING, Spanish Voyages of Discovery (Lovell's Library, No. 301), p. 120.

of some Indians who were alarmed at a negro whom they met in the depths of the forest, and "were worse scared than hurt, who seeing a blackamore in the top of a tree, looking out for his way which he had lost, surmised he was *Abamacho* or the devil, deeming all devils that are blacker than themselves, and being near to the plantation, they posted to the English, and entreated them to conjure the devil to his own place, who finding him to be a poor wandering blackamore, conducted him to his master." It is presumable that there were negro slaves in Massachusetts before 1633, and from time to time contact of Indian and negro must have taken place. That the intermarriage of Indian women with negroes was prevalent to a considerable extent in this State seems probable from Williams's¹ remarks upon the decision of Chief Justice Parker: "that the issue of the marriage of a slave husband and a free wife were free."

"This decision is strengthened by the statement of Kendall² in reference to the widespread desire of negro slaves to secure free Indian wives in order to insure the freedom of their children. He says, 'While slavery was supposed to be maintainable by law in Massachusetts, there was a particular temptation to negroes for taking Indian wives, the children of Indian women being acknowledged to be free.'"

Professor Shaler, in his interesting article "Science and the African Problem,"³ thus expresses himself regarding the question in New England: "It is frequently asserted that the remnants of the New England Indians as well as of other Indian tribes have been extensively mixed with African blood. It is likely that in New England, at least, this opinion is well founded, though it is doubtful if the mixture is as great as is commonly assumed to have been the case. The dark color of these Indians, which leads many to suppose that they may have a large inheritance of negro blood, is probably in many cases the native hue of the Indian race. The moral and physical result of this blending of two extremely diverse bloods is a matter of the utmost interest. It may be studied to great advantage in the New England Indians, for among them there has been little in the way of civil or social proscription to affect the result."

In a subsequent essay,⁴ Professor Shaler remarks, "I have been unable definitely to trace the existence in this section of any descendants of the blacks who were then there in the last century, save perhaps in the case of a few who have become commingled with the remnants of the Indians of Gay Head and Marshpee. If such there be, they are very few in number."

In the first volume of the "Massachusetts Historical Society Collections"⁵ there is a brief account of the Indians of Martha's Vineyard: "In the year 1763 there were remaining in Dukes County 313 Indians, 86 of whom were in Edgartown, 39 in Tilbury, and 188 in Chilmark. About that period they began to intermarry with negroes, in consequence of which the mixed race has increased in numbers, and improved in temperance and industry. At present there are of pure Indians and of the mixed race about 440 persons, 70 of whom live on Chappaquiddick (not more than one-third pure), about 25 at Sanchehecantacket (not more than one-third pure), about 40 at Christians town in the north part of Tisbury, toward the sound (about one-half pure), about 24 at Nashonohkamuck (about three-quarters pure), and about 276 at Gay Head (of which about one-fourth are pure). In this

account unmixed negroes are not reckoned." This information is given upon the authority of "Capt. Jerningham and Benj. Basset, Esq."

In Belknap's "Answer to Judge Tucker's Queries" it is stated,¹ "Some negroes are incorporated, and their breed mixed with the Indians of Cape Cod and Martha's Vineyard, and the Indians are said to be meliorated by the mixture."

In Volume III. of the second series, under date of 1802,² we find an account of the Indians of Marshpee: "The inhabitants of Marshpee are denominated Indians, but very few of the pure race are left. There are negroes, mulattoes, and Germans. Their numbers have often been taken, and have not varied much during the past twenty years. At present there are about 80 houses and 380 souls." According to an exact census taken in 1808, the Indians, negroes, and mulattoes in Marshpee numbered 357.

In the "History of New Bedford (1858)," by Daniel Ricketson, there is (pp. 253-262) an account of Paul Cuffee, whose mother was "an Indian woman named Ruth Moses." Cuffee was born on Cuttyhunk, one of the Elizabeth Islands, in 1759, and died on his farm at Westport in 1817. His father was a native of Africa, and Cuffee is described as "a man of noble personal appearance, tall, portly and dignified in his bearing. His complexion was not dark, and his hair was straight" (p. 225). At the age of twenty-five Cuffee married a member of his mother's tribe. He was a man of considerable attainments, being a sailor as well as a farmer.

Robert Rantoul, sen., in a paper read before the Beverly Lyceum in April, 1833,³ says of the negroes, "Some are incorporated with the Indians of Cape Cod and Martha's Vineyard, and the Indians are said to be improved by the mixture." He also states⁴ regarding the 6,001 "persons other than white," returned by the United States census of 1790 as resident in Massachusetts (with Maine), that it is supposed the blacks were upwards of 4,000; and of the remaining 2,000 many were a mixed breed between Indians and blacks."

Of the Gay Head Indians, a recent visitor, Mr. W. H. Clark,⁵ says, "The Indian reservations present much of interest. The Gay Head Indians, who, since the days of the early settlement of the country, have been friendly to the white men, are an industrious and cleanly people. Although one observes much that betokens the Indian type, the admixture of negro and white blood has materially changed them. A few years ago the Indians were admitted to citizenship, and one of their tribe was elected to the General Assembly of Massachusetts. The women far surpass the men in intelligence and thrift. The Indians earn a livelihood by agriculture, fishing, and as caterers to the tourists who visit Gay Head. Their little restaurants are scrupulously clean and very inviting places, where simple but good meals can be obtained. The number now on the reservation is not far from one hundred and fifty. Many, however, have sought homes for themselves elsewhere." An interesting point in connection with the history of the Indian and negro in Massachusetts is the deportation of the Pequots to the Bermudas⁶ after their utter defeat in the disastrous war which closed in 1638. We must also notice the importation of negroes from Barbadoes in exchange for Indians.⁷

¹ Massachusetts Historical Society Collections, 1st series, vol. iv. p. 206 (cf. 2d series, vol. iii. p. 12).

² Vol. iii. 1815, p. 4.

³ Printed in part in Historical Collections of Essex Institute, vol. xxiv. pp. 81-108.

⁴ Loc. cit., p. 99.

⁵ Johns Hopkins University Circulars, No. 84, December, 1890, p. 28.

⁶ WILLIAMS, History of the Negro Race in America, vol. i. pp. 173, 174; DE FOREST, History of the Indians of Connecticut (1852), pp. 117-160.

⁷ Massachusetts Historical Society Collections, 1st series, vol. i. p. 206.

¹ History of the Negro Race in America, vol. i. p. 180.

² Travels, vol. ii. p. 179.

³ Atlantic Monthly, vol. lxvi. 1890, p. 40, col. 1.

⁴ The Arena, vol. ii. p. 666.

⁵ Massachusetts Historical Society Collections, 1st series, vol. i. p. 206.

With regard to the other New England States, we do not at present possess many data. In De Forest's "History of the Indians of Connecticut," we find the following notices:—

"A few of this clan [the Milford band of the Paugusset or Wepawaug Indians] still [1849] live on about ten acres of land at Turkey Hill. The family name is Hatchett; they are mixed with negro blood; and they are all poor, degraded and miserable" (p. 356). "The tribe [the Golden Hill Paugussets] now [*circa* 1850] numbers two squaws, who live in an irregular connection with negroes, and six half-breed children, all of whom are grown up but one. They are intemperate, but have been of about the same number for many years. Their family name is Sherman" (p. 357).

"In 1832 the Groton Pequots numbered about forty persons of both sexes and all ages. They were considerably mixed with white and negro blood, but still possessed a feeling of clanship, and still preserved their ancient hatred for the Mohegans" (p. 443).

Of the Indians in Ledyard who are idle and given to drink, it is said (p. 445), "None of the pure Pequot race are left, all being mixed with Indians of other tribes or with whites and negroes. One little girl among them has blue eyes and light hair, and her skin is fairer than that of the majority of white persons. There is no such thing as regular marriage amongst them. In numbers they do not increase, and, if any thing, diminish. The community, like all of the same kind in the State, is noted for its wandering propensities, some or other of its members being almost continually on the stroll around Ledyard and the neighboring townships. From a fellow-feeling, therefore, they are extremely hospitable to all vagabonds, receiving without hesitation all that come to them, whether white, mulatto, or negro."

When we arrive at Long Island, we reach another point of miscegenation. Speaking of East-Hampton Town, Mr. William Wallace Tooker says,¹ "In regard to the degenerated remnant of the [Montauk] tribe now residing within the limits of the township, recognized by their characteristic aboriginal features, mixed with negro, we would say that they have no knowledge of their native language, traditions, or customs, all have been lost or forgotten, years ago." Of the Shinnacooks, Professor A. S. Gatschet remarks,² "The Shinnacook Indians are a tribe living on the southern shore of Long Island, New York State, where they have a reservation upon a peninsula projecting into Shinnacook Bay. There are 150 individuals now going under this name, but they are nearly all mixed with negro blood, dating from the times of slavery in the Northern States."

Proceeding along the Atlantic coast southward, we reach the region of the Chesapeake before we again meet with definite traces of negro-Indian intermixture. A very interesting discovery of Dr. Brinton's³ belongs here. In a manuscript of Pyrlæus, the missionary to the Mokawks, dating from 1780, are given the numerals 1-10 in a language styled "Nanticoke." Dr. Brinton, noticing the un-American and non-Algonquian aspect of these words, was led to the conclusion that "Pyrlæus . . . had met a runaway slave among the Nanticoques, and through him, or through some half-Indian half-negro, had obtained a vocabulary of some African dialect."

¹ Indian Place-Names in East-Hampton Town, with their Probable Significations (Sag Harbor, 1889), p. iv.

² American Antiquarian and Oriental Journal, November, 1889, p. 390.

³ "On Certain Supposed Nanticoke Words shown to be African" (American Antiquarian and Oriental Journal, 1887, pp. 350-354, especially 352). In the table given above there have been added for further comparison the Malinké numerals as given by Dr. Tautin in the *Revue de Linguistique et de Philologie Comparée*, vol. xx. (1887), p. 141.

The correctness of this conclusion is seen at a glance from the comparative table of the pseudo-Nanticoke and the Mandingo of Müller given by Dr. Brinton:—

ENGLISH.	PSEUDO-NANTICOKE.	MANDINGO (MÜLLER).	MALINKÉ (TAUTIN).
One	Killi	Kilin	Kili
Two	Filli	Fula	Fûla (Fillo, <i>Soninké</i>)
Three	Sapo	Sabba	Saba
Four	Nano	Nani	Nani
Five	Turo	Dulu, Lulu	Loulou, Doulou
Six	Woro	Woro	Ouoro, Ouaro
Seven	Wollango	Worong-wula	Oulounga
Eight	Secki	Segui	Seghi, Saghi
Nine	Collengo	Konanta	Kononto
Ten	Ta	Tang	Taï

This curious fact that Dr. Brinton has brought to light may perhaps be paralleled by others yet to be discovered in the future, when the whole history of the origin of the various tribes of African immigrants into America comes to be written.

With regard to Virginia, we have the evidence of Peter Kalm,¹ as follows: "In the year 1620, some negroes were brought to North America in a Dutch ship, and in Virginia they bought twenty of them. These are said to have been the first that came hither. When the Indians, who were then more numerous in the country than at present, saw these black people for the first time, they thought they were a true breed of devils, and therefore they called them *Manitto* for a great while, the word in their language signifying not only 'god,' but also 'devil.' . . . But since that time they have entertained less disagreeable notions of the negroes, for at present many live among them, and they even sometimes intermarry, as I myself have seen."

Thomas Jefferson, in his "Notes on the State of Virginia,"² says of the Mattaponi Indians of that State, "There remains of the Mattaponies three or four men only, and have more negro than Indian blood in them."

Mr. G. A. Townsend³ observes, concerning the Indians of the Chesapeake Peninsula, "In this [Dorchester] county, at Indian Creek, some of the last Indians of the peninsula struck their wigwams towards the close of the last century, and there are now no full-blooded aborigines on the Eastern shore, although many of the free-born negroes show Indian traces."

Enslavement of negroes by Indians (especially Cherokees) appears to have taken place in several of the South Atlantic States, and it is not unlikely that considerable miscegenation there occurred. Mr. McDonald Furman,⁴ in a note on "Negro Slavery among the South Carolina Indians," notes the mention, in the *South Carolina Gazette*, in the year 1748, of a "negro fellow" who had been sold by his former master to the Pedee Indians, from whom he was afterwards taken by the Catawbias; and in endeavoring to escape from the latter he was lost in the woods. This fact is of value in connection with the discovery of Dr. Brinton, referred to above.

In Hancock County, Tenn., there are to be found a peculiar people, who formerly resided in North Carolina. According to Dr. Burnett,⁵ the current belief regarding them is that "they were a mixture of the white, Indian, and negro;" but nothing certain appears to be known about them. They

¹ In Pinkerton, vol. xiii. p. 502.

² Ed. Philadelphia, 1825, p. 130.

³ Scribner's Magazine, 1871-72, p. 518.

⁴ American Antiquarian and Oriental Journal, vol. xii. p. 177; see also West, Status of the Negro in Virginia during the Colonial Period (1890), p. 38.

⁵ See "A Note on the Melungeons" (American Anthropologist, vol. ii. pp. 347-349).

bear the curious name of "Melungeons," which, Dr. Burnett suggests, is a corruption of the French *melange* ("mixed").

Figuring prominently as holders of negro slaves, we find the Seminoles of Florida. To cite a single instance: we learn that Mick-e-no-pah, a chief of the Seminoles, who took part in the war of 1835, and whose portrait was painted by Catlin, owned no fewer than one hundred negroes, and raised large crops of corn and cotton. From Cohen¹ we gather the following additional information: "The 'top governor' has two wives, one a very pretty squaw, and the other a half-breed negress. She is the ugliest of all women, and recalls the image of Bombie of the Frizzled Head in Paulding's *Koning's* works."

William Kennedy, in his "History of Texas,"² says regarding the enslavement of negroes by these Indians, "The possession of negroes, by rendering the Indians idle and dependent on slave-labor, has confirmed the defects of their character. The Seminole negroes mostly live separate from their masters, and manage their cattle and crops as they please, giving them a share of the produce. Williams, in his account of Florida, mentions the existence of a law among the Seminoles prohibiting individuals from selling their negroes to white people, any attempt to evade which has always raised great commotions amongst them. The State of Georgia claimed \$250,000 of the Creek Indians for runaway slaves. Under cover of these claims, says Williams, many negroes have been removed from their Indian owners by force or fraud. The slaves prefer the comparatively indolent life of the Indian settlements to the sugar and cotton fields of the planter, and the Indian slave-holders are quite satisfied if they are enabled to live without special toil." In the account of Major Long's expedition,³ we read, concerning the Cherokee settlement at Rocky Bayou, "Our host, a Metiff chief known as Tom Graves, and his wife of aboriginal race, were at table with us, and several slaves of African descent were in waiting. The Cherokees are said to treat their slaves with much lenity."

Marcy⁴ informs us that "within the past few years the Comanches have, for what reason I could not learn, taken an inveterate dislike to the negroes, and have massacred several small parties of these who attempted to escape from the Seminoles and cross the plains for the purpose of joining Wild Cat upon the Rio Grande." That the ill feeling was not always upon the side of the Indians, we see from Zeisberger's "Diary" (vol. ii. p. 142), where we learn that two negroes who went from Detroit through the bush killed five Wyandottes whom they came across there.

A mass of information regarding the Seminoles of Florida is to be found in the excellent report of the Rev. Clay McCauley,⁵ to the Bureau of Ethnology. From this we learn that at that time there were among these Indians three negroes and seven persons of mixed race, distributed as follows:⁶ at Big Cypress settlement, one male of mixed race between five and ten years of age, and one black female over twenty; at Fish-Eating Creek, one male of mixed race under five years of age, one between ten and fifteen, one over twenty, one female of mixed race over twenty, and one

black female over twenty; at Catfish Lake, one male and one female of mixed race over twenty years of age, and one black female over twenty. At the Cow Creek and Miami River settlements there appear to be neither negroes nor half-breeds. As regards sex, the numbers are, mixed, females two, males five; black, females three, males none. The only half-breeds are "children of Indian fathers by negroes who have been adopted into the tribe; for, according to Mr. McCauley, the birth of a white half-breed would be followed by the death of the Indian mother at the hands of her own people." Mr. McCauley states that he found nothing to indicate that slavery exists among the Seminoles, "the negroes living apparently on terms of perfect equality."¹ He further expresses the opinion, "The Florida Seminoles, I think, rather offered a place of refuge for fugitive bondsmen, and gradually made them members of their tribe."¹ An interesting account is given of Me-Le, a half-breed Seminole, "son of an Indian, Ho-la-q-to mik-ko, by a negress, adopted into the tribe when a child." It is stated that he favors the white man's ways, and is progressive. Particularly noticeable was "his uncropped head of luxuriant, curly hair," an exception to the "singular cut of hair peculiar to the Seminole men."² He notes also at the Big Cypress Swamp a small half-breed whose "brilliant wool was twisted into many little sharp cones, which stuck out over his head like so many spikes on an ancient battle-club."³ The only exception to the usual hair-dressing of females of the tribe was found in the manner "in which Ci-ha-ne, a negress, had disposed of her long crisp tresses. Hers was a veritable Medusa head. A score or more of dangling snaky plaits, hanging down over her black face and shoulders, gave her a most repulsive appearance."³

Another article dealing with the Seminoles of Florida is that of Mr. Kirk Munroe,⁴ in a recent number of *Scribner's Magazine*. From it we learn, that, "should a Seminole maiden unwisely bestow her affections upon any man outside her tribe, her life would be forfeited." Mr. Munroe states that "there are no half-breeds among the Florida Seminoles,"⁵ but notes, however, a case in which a Seminole "took as his wife a comely negro woman, who was captured by the Indians during the Seminole war; but their children are so far from being regarded as equals by other members of the tribe, that no full-blooded Indian will break bread with them. There are two young men in this family; and, should a young full-blood of their own age visit their camp, he will eat with the father, but the young half-breeds must wait until he is through."⁵ Mr. Munroe states also that he took particular pains to discover whether the statement that "the Florida Seminoles were more than half of negro blood" were true or not, but failed to obtain any evidence in support of such an assertion. He further adds, "I have never seen a slave, nor yet a free negro, in any of the camps that I visited, and I have passed weeks at a time in company with these Indians."⁶

Mr. Munroe asked a young Seminole about the negroes, with the following result: "he looked at me steadily for a moment, without answering, and then holding up one finger, then a second, a third, and a fourth, he said, 'iste-hatke' ('white-man'), 'iste-chatte' ('red-man'), 'epah'

¹ "Notes of Florida" (see Report of Smithsonian Institution, 1885, Part ii. p. 215).

² WILLIAM KENNEDY, *Texas, The Rise, Progress, and Prospects of the Republic of Texas* (London, 1841), vol. i. p. 350.

³ *An Account of an Expedition from Pittsburgh to the Rocky Mountains, etc.*, compiled by Ed. James (1823), vol. ii. p. 267.

⁴ MARCY and McCLELLAN, *Exploration of the Red River of Louisiana* (1853), p. 101.

⁵ "The Seminole Indians of Florida" (Fifth Annual Report of the Bureau of Ethnology, 1883-84, Washington, 1887, pp. 459-531).

⁶ *Loc. cit.*, p. 478.

¹ "The Seminole Indians of Florida" (Fifth Annual Report of the Bureau of Ethnology, 1883-84, Washington, 1887, p. 526).

² *Loc. cit.*, p. 490.

³ *Loc. cit.*, p. 437.

⁴ KIRK MUNROE, "A Forgotten Remnant" (*Scribner's Magazine*, vol. vii. 1890, pp. 303-317).

⁵ *Loc. cit.*, p. 306.

⁶ *Loc. cit.*, p. 307.

('dog'), with a decided emphasis, and 'iste-lustee' ('black-man'). There was certainly no need to question him further upon the subject."¹

Amongst several of the Indian tribes now resident in the Indian Territory, negro slavery existed; but many adoptions have taken place, although the question does not even now appear to be quite settled. Mr. George A. Reynolds states,² "When the war ended, they [Seminoles] were destitute, and scattered from the Red River to Kansas. Again they sought the protection of the government. They formed new treaties; they complied with all the conditions imposed upon them; they adopted their former slaves, and made them citizens of their country, with equal rights in the soil and annuities. Their negroes hold office and sit in their councils." Mr. L. N. Robinson,³ writing in August, 1869, calls attention to the failure of the Choctaw and Chickasaw nations to provide for the adoption (within the time specified) of "persons of African descent residing amongst them," as required by a section of the treaty of 1866, and points out that certain "difficulties in the Creek nation are to some extent attributable to the presence of the black element, and the agitation of questions growing out of their presence and participation in tribal affairs." He further remarks, "Under the Cherokee treaty, the separation of families, parent and child, husband and wife, is as complete, as cruel, and inhuman, as was ever the case worked under the system of slavery. The situation of the blacks within the Indian tribes taken as a class is a reproach to our boasted civilization and love of justice, which is inexcusable so long as the plan of colonization remains untried."

From the report for 1869,⁴ we learn that "one peculiar difference exists between negro and Indian in the Five Nations [i.e., Cherokee, etc.]; i.e., intermarriage with Indian gives a United States citizen, male or female, rights, but intermarriage with negro does not." Some interesting information is contained in the report of Mr. Robert Owen to the commissioner of Indian affairs in 1888,⁵ regarding the aborigines resident in the Indian territory. He says, "There are many negroes, former slaves to Indians; and among the Creeks is some negro miscegenation, though much exaggerated in reports on that subject. There are numbers of adopted citizens, — whites, other Indians, and negroes." In the Cherokee nation it appears that the 2,400 negroes, along with the other adopted citizens, have been denied the right to participation in public annuities. Among the Choctaws, negroes have been adopted and "given a *pro rata* of schools, right of suffrage, and citizenship, as provided by treaty." Similar is the condition of the negroes of the Creek nation. Of the blacks among the Chickasaws, Mr. Owen says, "They are still in the forlorn status, as stated in my last report. The Chickasaws are firmly resolved never to receive them. It is the palpable duty of the government to remove them."

In the Bermudas some miscegenation has taken place. About 1616 we find it recorded that a vessel arrived there which "brought with her also one Indian and a negro (the first these islands ever had)."⁶ After the utter defeat of the Indians in the Pequot war, numbers of them were transported to the Bermudas from Massachusetts, and amalga-

mation of these with the negroes has to a certain extent occurred. Professor H. C. Bolton, in an interesting article on the Bermudian negroes, in the *Journal of American Folk-Lore*,¹ makes the following statement: "The colored population of Bermuda have, in general, attained a higher stage of development, and made greater progress in civilization, than their kindred in the southern United States. This is probably due in part to close contact (not amalgamation) with their Anglo-Saxon masters on these isolated islands, and in part to the admixture of Indian blood in their ancestors. Between the years 1630 and 1660 many negro and Indian slaves were brought into the British colony, — the negroes from Africa and the West Indies, and a large number of red-skins from Massachusetts, prisoners taken in the Pequot and King Philip's wars. Many of the colored people show in their physiognomy the influence of the Indian type. Moreover, slavery was abolished in 1834, Bermuda being the first colony to advocate immediate rather than gradual emancipation; but the importation of negroes from Africa had ceased long before, so the type resulting from the mixed races continued to dominate. The faces of many of the dark-skinned natives are really fine; their lips being thinner, noses sharper, cheek-bones less obtrusive, and their facial angle larger, than those of most negroes in the Southern States."

In Neill's "History of Minnesota,"² there is the following interesting passage, the facts to which it relates belonging to the year 1819: "Three miles above the mouth of the St. Louis River they came to an Ojebwa village of 14 lodges. Among the residents were the children of an African by the name of Bungo, the servant of a British officer who once commanded at Mackinaw. Their hair was curled and skin glossy, and their features altogether African."

A subject to which some attention has recently been devoted is the relation of the folk-lore of the negro to that of the Indian. This has been discussed at considerable length by Professor T. F. Crane, in his excellent review of "Uncle Remus,"³ and we need but to cite his conclusion: "We are now prepared to consider briefly these stories, which are substantially the same in Brazil and in the Southern States. That the negroes of the United States obtained these stories from the South American Indians is an hypothesis no one would think of maintaining; but that the Indians heard these stories from the African slaves in Brazil, and that the latter, as well as those who were formerly slaves in the United States, brought these stories with them from Africa, is, we think, beyond a doubt, the explanation of the resemblances we have noted." Besides "Uncle Remus," Jones's,⁴ and Gordon's and Page's,⁵ contributions to negro literature may be studied to advantage. It is possible that a few of the negro stories were borrowed by the blacks from the red men. Such was the opinion of Major Powell.⁶ Mr. James Mooney says of certain myths of the Cherokees,⁷ "They resemble the 'Uncle Remus' stories, which I yet hope to prove are of Indian origin."

In the present paper no attempt has been made to exhaust the subject. South America and the West Indies have been left untouched. To make the study of the contact of the

¹ Vol. iii, p. 222.

² E. D. NEILL, *History of Minnesota* (Philadelphia, 1858), p. 322.

³ KIRK MUNROE, "A Forgotten Remnant" (Scribner's Magazine, vol. vii, 1890, p. 307).

⁴ Report of Commissioner of Indian Affairs, 1869 (Washington, 1870), p. 417.

⁵ *Ibid.*, p. 399.

⁶ See p. 132; also Smithsonian Report, 1886, part ii, part v, p. 225.

⁷ Fifty-seventh Report of the Commissioner of Indian Affairs, 1888, p. 131.

⁸ Sir J. H. LEFROY, *The History of the Bermudas or Summer Islands* (ed. for Hakluyt Society, 1882), p. 84.

³ "Plantation Folk-Lore" (Popular Science Monthly, vol. xviii, 1881, pp. 324-333); see also C. F. HARTT, *Amazonian Tortoise Myths* (1875); HERBERT SMITH, *Brazil, The Amazons, and The Coast*; and the other literature cited by Professor Crane.

⁴ *Negro Myths of the Georgia Coast*, 1888.

⁵ Befo' de War. *Echoes in Negro Dialect*, 1888.

⁶ J. C. HARRIS, *Uncle Remus*, Preface, p. 4.

⁷ *Journal of American Folk-Lore*, vol. i, p. 106.

African and the American as complete as possible, it is highly desirable that attention should be paid to the obtaining of information regarding (1) the results of the intermarriage of Indian and negro, the physiology of the offspring of such unions; (2) the social status of the negro among the various Indian tribes, the Indian as a slave-holder, the opinion the negro has of the Indian; (3) the influence of the Indian upon negro, and of the negro upon Indian, mythology and folk-lore.

While there seems little probability of data existing, to any great extent, regarding the linguistic relations of the Indian and the negro, it is reasonable to expect that much relating to their physical anthropology, their social conditions, and their folk-lore, may yet be made known.

HEALTH MATTERS.

Bone Grafting.

MR. A. G. Miller, in the *Lancet* for Sept. 20, reports the history of a case in which he used decalcified-bone chips successfully to fill up a large cavity in the head of the tibia. In the *New York Medical Journal* it is stated that a piece of the rib of an ox was used, being first scraped and then decalcified in a weak solution of hydrochloric acid. After cleansing by pressure, it was placed for forty-eight hours in a carbolic-acid solution, one to twenty, then removed, and cut into small pieces. During the scraping-out of the cavity in the knee, preparatory to the grafting, a number of small pieces of bone were removed. These were placed in a solution of boric acid for use later in the operation. The cavity was then stuffed with the decalcified-bone shavings, the pieces of fresh bone being added last. The cavity thus filled was about two inches in diameter. Granulation and healing took place rapidly: the only pieces of bone that became necrosed were from the patient's own body. Mr. Miller is convinced, from his observation of this case, that the healing of large bone cavities, the result of injury or disease, is greatly facilitated by stuffing them with decalcified-bone chips; that these are superior to fresh bone; and that fresh bone not only is of no use, but actually hinders the process of granulation.

Recent Saving of Life in Michigan.

In a carefully prepared paper read before the Sanitary Convention at Vicksburg, the proceedings of which are published, Dr. Baker gave official statistics and evidence, which he summarized as follows:—

"The record of the great saving of human life and health in Michigan in recent years is one to which, it seems to me, the State and local boards of health in Michigan can justly 'point with pride.' It is a record of the saving of over one hundred lives per year from small-pox, four hundred lives per year saved from death by scarlet-fever, and nearly six hundred lives per year saved from death by diphtheria,—an aggregate of eleven hundred lives per year, or three lives per day, saved from these three diseases. This is a record which we ask to have examined, and which we are willing to have compared with that of the man who 'made two blades of grass grow where only one grew before.'"

To relieve an Overworked Brain.

A Swiss doctor says that many persons who extend their mental work well into the night, who during the evening follow attentively the programme of a theatre or concert, or who engage evenings in the proceedings of societies or clubs, are awaked in the morning or in the night with headache (*The Sanitary Inspector*). He is particular to say that he does not refer to that headache which our Teutonic brethren designate *Katzenjammer*, that follows certain convivial indulgences. This headache affects many persons who are quite well otherwise, and is due in part to the previous excessive work of the brain, whereby an abnormal flow of blood to that organ is caused, in part to other causes, for example, too great heat of rooms, contamination of the air with

carbonic acid, exhalations from human bodies, and tobacco-smoke.

For a long while the doctor was himself a sufferer from headache of this kind, but of late years has wholly protected himself from it by simple means. When he is obliged to continue his brain work into the evening, or to be out late nights in rooms not well ventilated, instead of going directly to bed, he takes a brisk walk for half an hour or an hour. While taking this tramp he stops now and then and practises lung gymnastics by breathing in and out deeply a few times. When he then goes to bed, he sleeps soundly. Notwithstanding the shortening of the hours of sleep, he awakes with no trace of headache. There exists a clear and well-known physiological reason why this treatment should be effective.

NOTES AND NEWS.

THE Lecture Association of the University of Pennsylvania announces a special course of illustrated public lectures by Mr. Barr Ferree of New York, on Feb. 12, 17, and 19, on "The Influence of Christianity on the Development of Architecture." These lectures, which will be three in number, will treat of (1) the basilica, the formative period of Christian architecture; (2) the cathedral, the perfected form of Christian architecture; and (3) the monastic orders, the greatest Christian builders.

—The Snow-Shoe Section of the Appalachian Mountain Club, Boston, has arranged a winter excursion to Waterville, N.H., to which members of the club and their friends are invited. The main party will leave Boston, Monday, Feb. 16, by the nine o'clock train from the Lowell Station. Others will leave Boston Thursday evening, spend the night at Plymouth, and join the party at Waterville Friday morning. The return will be on Monday or Tuesday, Feb. 23 or 24. The expense will not exceed \$15. Comfortable rooms with stoves will be provided.

—It is announced in the January "Proceedings of the Royal Geographical Society" that a competent observer, Mr. J. T. Bent, the explorer of Phœnician remains in the Bahrein Islands, has decided on undertaking an expedition to the mysterious ruins of Zimbabwe or Zimbaoe, in Mashonaland, and other remains in the interior of South Africa, with the object of thoroughly examining the structures and the country in their neighborhood. The expedition has the active co-operation of the British East Africa Company and the Royal Geographical Society, and will be well equipped for geographical as well as archæological survey. It was to leave England at the end of last month.

—Mr. Robert Athelston Marr has resigned his position as assistant in the United States Coast and Geodetic Survey, to accept the professorship of civil engineering in the Virginia Military Institute. Mr. Marr was born in Tennessee in 1856, was graduated at the Virginia Military Institute, entered the Coast and Geodetic Survey in 1878, and since then has served with distinction in the triangulation and astronomical parties both on this coast and in California and Alaska. The coast survey service has lost an energetic and capable officer, and, while his colleagues will miss him, they wish him every success in his new duties. The vacancy caused by Mr. Marr's resignation has been filled by the promotion of Sub-Assistant Isaac Winston to the grade of assistant. Mr. Winston has for several years past had charge of one of the geodetic levelling parties of the survey.

—Among recent appointments of Johns Hopkins men, we note that of Felix Lengfeld (fellow 1887-88, Ph.D. 1888) as professor of chemistry and assaying in the South Dakota School of Mines; C. W. Emil Miller (A.B. 1882, fellow 1883-85, Ph.D. 1886) as professor of languages, Walther College, St. Louis, Mo.; Augustus T. Murray (fellow 1887-88, Ph.D. 1890) as Professor of Greek, Colorado College; Charles L. Smith (fellow 1887-88, Ph.D. 1889, instructor 1889-91) as professor of history, William Jewell College, Missouri; Edward L. Stevenson (graduate student 1887-88) as instructor in history, Rutgers College; Amos G. Warner (fellow 1886-87, Ph.D. 1888) as general superintendent of charities in the District of Columbia, as provided by the recent congressional appropriation for the district; and William K. Williams (Ph.D.

1889) as superintendent of classification and distribution in the Newberry Library, Chicago. Albert Shaw (Ph.D. 1884) has become the American editor of the *Review of Reviews*.

— M. Em. Deschamps transmitted from Mahé, on the Malabar coast, some interesting information respecting the Veddas, descendants of the first-known inhabitants of Ceylon. He says, according to the "Proceedings of the Royal Geographical Society," that they are probably the "Yakkas," or "demons," of whom the ancient works and legends speak,—an appellation derived from their demoniacal cult, and which was probably changed by the first conquerors of the island into that of "Veddas" ("hunters"). They inhabit a belt of forests lying on the eastern confines of the central province. As a race, they are rapidly disappearing, and now number only two hundred or three hundred. Their villages lie several miles apart, and consist of one or two huts, formed of the branches and bark of trees. Some, when the rains come on, find shelter in the rocks, and have received the name of "Galla-Veddas." Their weapons, consisting of bow, arrows, and hatchet, are their principal goods. They are great hunters. The Veddas never speak unless absolutely obliged, and do not know how to laugh. Their manner of speech is brusque, and their language is very poor, being deficient in whole series of words, i.e., trees, plants, colors, etc. Although living in the midst of a population which is at once polygamous and polyandrous, they remain monogamists. The baptism of children is the only ceremony to which they attach great importance. They have no chief or social organization. Their religion consists in fear of the demons, of which the jungle is supposed to be full. The dead are now buried in the forest. Not long ago it was the practice to simply abandon the corpses. The Vedda never betrays any sentiments: anger astonishes, and laughter exasperates him. Dancing is his favorite occupation. Doctors and medicines are unknown. The people meet to dance away the devil of a sick man. The men are rather small, strongly built; their lower limbs badly made, and not well proportioned; hair black and coarse; eyes black and sparkling, with a fierce look; forehead straight and broad; nose broad; the general appearance of the countenance not disagreeable; their body is maroon in color, and is repulsively dirty. The women are small, and possess few of the attractions of their sex. Their clothing, like that of the men, is of the scantiest.

— At a meeting of the Geographical Society of Paris held on Nov. 7, 1890, M. Cholet, the administrator of Brazzaville, gave some account of his recent ascent of the Sangha, an important and hitherto practically unexplored tributary of the Kongo. The Sangha enters the Kongo at Bonga, a French station between the embouchures of the Alima and Mobangi. The "Proceedings of the Royal Geographical Society" (Jan.) states that the traveller, who was accompanied by M. Pottier, quitted Brazzaville in the little steamer "Ballay" on the 19th of February, and on the 30th of March commenced their voyage up the Sangha. The river varies in breadth from 1,000 yards to a mile and a half. Its course is encumbered with islands and sand-banks, the latter, when the waters are low, swarming with hippopotamuses. In the lower course the river-banks are low and marshy. The villages lie far from the stream, and are inhabited by the Afurus, a commercial people, who bring ivory from the Upper Sangha down to Bonga. The middle course is inhabited by the Busindes, whose villages are situated on the banks, which are more elevated here. The upper part of the river, up to the point reached by the party, is inhabited by the Bassangas, a rich and powerful tribe, whose villages are built on islands. At the village of Uoso the Sangha receives an important affluent, the N'goko, and itself takes the name of Masa. The latter arm is over 2,000 yards broad, but the sand-banks prevented an ascent being made for any considerable distance. The N'goko has, on the other hand, a narrow bed, never exceeding in breadth 220 yards. High wooded mountains lie on both sides of the stream. Elephants abound in this region. The people live at a distance from the river. A few miles above Uoso the N'goko receives a tributary, the Mangango (100 yards broad), and changes its name to Monba. Beyond this point the country seems quite uninhabited. Navigation becoming difficult and provisions failing, the return voyage was commenced on the 15th of

May, and Bonga was reached on the 31st of May. The natives were friendly after their first fears had been overcome. They have no relations with the people of the Mobangi, and are not cannibals. Judging by their weapons, language, and dances, they seem to resemble the Pahuins and the Udumbos. The country is rich in ivory. India-rubber was also found.

— It is with much pleasure that *Science* reprints the following extract from the *Congressional Record* of Feb. 6, 1891, on the consideration of the Sundry Civil Appropriation Bill in Committee of the Whole House, Feb. 5, 1891: "Mr. Cannon. Mr. Chairman,— I desire, if I can have the attention of the gentleman from Texas [Mr. Sayers], to state that the next eleven pages of this bill cover items of appropriation for the Coast Survey. They are about the same as in the current year, with the exception of an increase of about \$13,000 for printing charts, etc., found to be absolutely necessary. Last year and this year the Committee on Appropriations gave a most exhaustive examination of this service, and I believe the committee is unanimously of the opinion that it is conducted in as economical, praiseworthy, and profitable a manner for the benefit of the government as any part of the public service; and that substantially, if not literally, we have given the amount that is estimated for. For the purpose of saving time, I ask the committee, with the approval of the gentleman from Texas, that we may pass over the Coast-Survey items." Such a speech is seldom made concerning a bureau of one of our departments, on the floor of our legislative halls; and it must be very gratifying to the superintendent, and to his subordinates, who several years ago felt that they were subjected to much criticism which was unjust. Recognition of this character serves to stimulate the zeal of those engaged in scientific pursuits as well as in other walks of life.

— The *El Diario*, July 3, of Buenos Ayres announces the return of M. Storm's expedition from the Pilcomayo, after an absence of over five months. Like other expeditions into this region, as quoted in the January "Proceedings of the Royal Geographical Society," the party encountered great difficulties, but escaped without loss of life. The river was navigated in the steamer for a long distance, and numerous obstacles were surmounted, but at last the leaders, with a few men, had to take to their canoes. Notwithstanding the hostility of the Indians, the party pushed on to the Bolivian frontier, and explored a large part of this little-known region. They have brought back important zoological and botanical collections. There seems to be no doubt that the western arm of the river is the true Pilcomayo.

— Further news of Capt. Page's unfortunate expedition up the Pilcomayo has been received by the Royal Geographical Society, London, in a letter from Mr. J. Graham Kerr, one of the English members of the party, who wrote from latitude 24° 58', longitude 58° 40', on the 4th of October last. He says that the expedition started with provisions for six months, and that they had then been nine months on the way, and were in a starving condition. Fortunately, however, they had been able to kill a good many deer. The relief party of twenty soldiers, sent up by the government, arrived on Oct. 4. The river Pilcomayo, he says, at that season is a mere brook, a few feet wide and only a few inches deep. Even in the season of higher water, when they ascended it, navigation was very difficult, owing to the shallowness and the numerous snags and tree-trunks that encumbered the passage. In April they resorted to the laborious method of constructing dams below the steamer, and waiting till the water rose to a sufficient height to move ahead for a short distance. They reached the position from which Mr. Kerr wrote, on June 14. Capt. Page died on his way down to obtain succor with three men in the only remaining boat. The remainder of the party, left to their own resources, were in daily fear of an attack from the hostile Indians of the Chaco; but, though watched continually, they received only one visit from them, on Sept. 18, and that passed off in a friendly manner. At the time of writing, preparations were being made for retreat down the river in the boat which brought up the relief party. If the boat should prove useless, they intended to burn it and march to the Paraguay, a journey of two months or thereabouts.

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Attention is called to the "Wants" column. All are invited to use it in soliciting information or seeking new positions. The name and address of applicants should be given in full, so that answers will go direct to them. The "Exchange" column is likewise open.

BROWN ROT IN GRAPES.

In a bulletin soon to be issued by the Ohio Experiment Station, Dr. C. M. Weed gives the following account of the downy mildew, or brown rot, of grapes:—

For many years the vineyardists of the great fruit belt in northern Ohio along the southern shore of Lake Erie have been troubled by a disease affecting the foliage and fruit of the grape, called "downy mildew," or "brown rot." At times this disease has ruined nearly the entire crop, and has threatened to destroy the vineyard industry over a large area. Fortunately, however, this disaster has been averted by the discovery of a method by which the disease can be largely or entirely prevented at comparatively slight expense.

The downy mildew, or brown rot, of grapes is a fungous disease; that is, it is a diseased condition of the foliage or fruit, due to the presence of a fungus. This fungus is a minute parasitic plant that develops at the expense of the tissues of the grape, thus causing blighting of the leaf, and decay of the fruit. It is distributed over nearly the entire eastern half of the United States, and occurs upon both the wild and cultivated varieties of grapes. It probably lived upon the former before the introduction of the latter. It attacks all the green parts of the vine, including the young shoots, as well as the leaves and berries, and, like other fungi, reproduces by means of spores,—minute bodies corresponding in function to the seeds of flowering plants.

When one of these spores falls upon a leaf where there is sufficient moisture, it germinates by sending out a little tube,—something as a kernel of corn in moist soil sends out its germinating radicle,—and this tube penetrates the epidermis, or skin, of the leaf. Once inside, the tube continues to grow, pushing about between the cells of the leaf, and forming what is called the mycelium or vegetative portion of the fungus, which may be likened to the roots of higher plants. As there is little nourishment to be obtained between the cells, this mycelium develops minute processes, which push through the cell walls and absorb the contents.

After this mycelium has developed in the leaf for some time, it is ready to produce its spores. Consequently it sends out through the breathing-pores, or stomata, of the leaf, its fruiting branches. These bear upon their tips small oval bodies, which are the spores. The "mildew," which is visible to the naked eye, is composed of these fruiting branches and their spores. It only develops under certain atmospheric conditions, so that the mycelium may exist in the affected parts of the vine for some time before this outward manifestation of its presence occurs. This is the reason

that a vineyard may apparently be "struck" with mildew in a single night.

Besides the spores above described, which are produced during the summer season, and consequently are called summer spores, there is developed in the fall a different class of spores by which the fungus passes through the winter. Hence these latter are called the winter spores.

A knowledge of the method of development of the fungus makes it evident that it cannot be reached after it has penetrated its host. Consequently remedial treatment must be limited to destroying the spores, and preventing their ingress to the tissues of the plant. The experience of the last few years has shown that this can be successfully accomplished by spraying the vines with dilute solutions of certain salts of copper, particularly sulphate of copper, or blue vitriol.

Experiments with these copper compounds as preventives of the several fungous diseases of the grape have been in progress in France for a number of years, and have been attended with remarkably successful results. The subject was taken up in America about the middle of the last decade, and wonderful progress has since been made. The Ohio station feels largely indebted to the United States Department of Agriculture for the results obtained, especially to Messrs. Scribner and Galloway, who have had the work in charge. In Ohio the first experiments were apparently made by Mr. George M. High, of Ottawa County, who for the last five years has tested the remedies thoroughly, and has triumphed over the unprogressive growers who were content to let the disease destroy their crops rather than try any new-fangled methods of checking it.

THE NAME "AMERICA."

AT the eighth international congress of Americanists, which was held in Paris from Oct. 14 to Oct. 20, 1890, only a certain number of the questions treated were of interest from a geographical point of view. Among these may be mentioned the discussion on the origin of the name "America," which was opened by M. Jules Marcou, who asserted, as we learn from the "Proceedings of the Royal Geographical Society," London, that the name "America" was derived from a range of mountains in Central America, which, in the language of the natives, is called "Amerique;" and that Vespucci never bore the Christian name of "Amerigo," because this latter is not a saint's name in the Italian calendar; and, further, that he changed his name "Alberico" to "Amerigo" for the first time after the name by which the New World is now commonly known began to be used, in order to cause it to be believed that the continent was so named in his honor. But M. Govi proved two years ago that the name "Alberico" is in the Florentine language identical with "Amerigo;" and that Vespucci, before the year 1500, sometimes subscribed himself "Amerigo" appears from a letter recently discovered among the archives of the Duke of Gonzaga at Mantua. This point was corroborated by the Spanish-Americanist, De la Espada, from letters and pamphlets preserved in the Archiv de las Indias at Seville, in which Vespucci sometimes calls himself "Alberico," and sometimes "Amerigo." *En passant*, the Spanish *savant* mentioned the interesting fact that the first of the so-called "quatuor navigationes" was not made by Vespucci at all.

M. Hamy adduced a further interesting proof of the incorrectness of M. Marcou's contention, in the shape of a map of the world prepared in the year 1490 by the cartographer Vallescu of Mallorca, on the back of which is a note to the effect that the map was bought in at an auction by the merchant Amerigo Vespucci for 120 gold ducats. Further, the general secretary of the congress, M. Pector, pointed out, that, according to a communication received from the president of Nicaragua, the range of mountains in question is not called "Amerique" at all, but "Amerisque." After this very thorough discussion of the question, it is to be hoped that the accusations against Vespucci and Hylacomylus may not be heard of again. An important contribution to the cartography of America was furnished by the paper read by M. Marcel upon two globes discovered by him, which date back probably from the year 1513.

SCIENTIFIC RESULTS OF NANSEN'S JOURNEY ACROSS GREENLAND.

DR. FRIDTJOF NANSEN, at a meeting of the Geographical Society of Berlin, Nov. 8, 1890, read a paper on his journey across Greenland, with special reference to the scientific results of the same. By this expedition it is shown ("Proceedings of the Royal Geographical Society," London) that the whole of Greenland south of about 75° north latitude is covered by an immense unbroken coating of inland ice. How far this covering extends over northern Greenland is not yet accurately known. That it must go beyond 75° is evident from the mighty glaciers which project into the sea along the whole of the west coast of Greenland. Of these, the immense glacier at Upernivik shows a movement of as much as 99 feet in 24 hours. Such glaciers must of necessity be fed by an unbroken ice-covering in the interior, because otherwise they would not have sufficient material for their enormous production. Although under 80° north latitude there are large glaciers, like the Humboldt glacier, still the latter appears to have no important motion; and, inasmuch as Grinnell Land also is not completely covered with ice, it is quite possible that the extreme north of Greenland, in consequence of the atmospheric precipitation being too insignificant, is no longer wholly overlaid with this ice-covering.

The highest point reached by the expedition exceeded 8,915 feet, and lies about 112 miles from the east coast and 168 miles from the west coast. But the highest part of the ice does not lie so near to the east coast as might appear from the foregoing: for, in the first place, the route of the expedition was not at right angles to the coast, but inclined to the longitudinal axis of the country, the direction being first north-west and then west-south-west; and, secondly, the land in the interior rises from the south to the north. Consequently the highest point of the ice lies, in fact, nearer the middle of the country than would appear from the route. The periphery of the ice-covering corresponds pretty much to the segment of a circle of about 6,450 miles diameter. The Jensen journey into the interior gives a circular periphery with a radius of 5,560 miles; and Nordenskiöld's journey, one with a radius of 14,530 miles. It follows that the upper side of the inland ice forms a remarkably regular cylindrical surface from one coast to the other, although the radii of this cylinder increase considerably from south to north. The underlying land is certainly, as the numerous fiords prove, just as mountainous as Norway. But the fact that the surface of the ice is so regular is due to the pressure of the plastic ice-masses, and the surface of the ice reaches its highest level just where the resistance to this force is greatest. The watershed of the underlying land lies nearer to the east coast than to the west; then the resistance to the pressure of the masses of ice will also be greater on this side than on the west coast, and the high ridges of the ice-covering will also be found to lie between the middle axis of Greenland and the water-divide of the land buried beneath the ice.

The thickness of the Greenland ice, Nansen estimates at from 5,000 to 6,000 feet over the valleys of the underlying land. The pressure of a glacier 6,000 feet high upon its base would amount to at least 160 atmospheres: the ice-masses must therefore exercise a strong moulding influence upon the land. The inland ice at a short distance from the coast is composed of fine dry snow, on the top of which the sun in summer only is powerful enough to form a thin melting crust. The ice-poles six feet long could be driven into these masses without striking firm ice.

The daily variation in the temperature amounted, in the month of September, to from 36° to 45° F. The annual variation must be enormous. The moisture of the air is very great: with few exceptions, it amounted to between 90 and 100 per cent. The number of days of atmospheric precipitation is also large. Of the forty days occupied by the expedition in crossing the ice, four were rainy, snow fell on eleven, and hail on one. Inasmuch as there is now no melting of the ice in the interior of Greenland, and evaporation also is almost *nil*, the chief factor in preventing the further increase of the ice-masses, apart from the great part which is played by the movement of the ice-masses in the direction of the coast, is apparently to be found in the "terrestrial heat." Given the mean annual temperature on the surface of the

inland ice at -22 F., and the geo-thermic scale of depth of the ice at about 55½ feet per 1° F., the temperature of the ice would, even at 3,000 feet, stand at melting-point. In any case, an active melting process goes on at the bottom of the ice, and rivers pour forth into the sea from under the ice in winter as well as in summer. Nansen himself had the opportunity of observing this during the most rigorous winter. These streams, which must flow under the enormous pressure of the ice-masses, are powerful eroding agents. The formation of the "asar" in Sweden, and of the "kames" in Scotland, England, and Ireland, are apparently to be accounted for in this way.

LETTERS TO THE EDITOR.

*** Correspondents are requested to be as brief as possible. The writer's name is in all cases required as proof of good faith.*

The editor will be glad to publish any queries consonant with the character of the journal.

On request, twenty copies of the number containing his communication will be furnished free to any correspondent.

What caused the Obliquity of the Ecliptic.

It is difficult to bring the mind to believe that there ever was a time when there were no seasons, — spring, summer, autumn, and winter, — as now. In attempting to account for natural phenomena, we have nearly always assumed that the axis of the earth was originally inclined to the plane of the ecliptic at an angle of 23½°, as we now find it, and of course we in consequence have formed in our minds the idea of the annual recurrence of the seasons through all geological time; but the elimination of the seasons from the early history of the earth has been forced upon us by the accumulation of facts from the geological record. There is abundant evidence to prove the existence of tropical or sub-tropical animals and plants in Arctic latitudes as late as the tertiary. In Professor Dana's "Manual of Geology" (third edition, p. 352) that author says, "If we draw any conclusion from the facts, it must be that the temperature of the Arctic zone differed little from that of Europe and America. Through the whole hemisphere, and we may say world, there was a genial atmosphere for one uniform type of vegetables, and there were genial waters for corals and brachiopods." Scarcely any one now, who is conversant with the facts, will deny that the early history of the earth was marked with a uniform, or nearly uniform, temperature, in all latitudes, prior to and including most of the tertiary. The main difference of opinion existing now among scientific men is how to account for such uniform, world climate.

So of the glacial period. Every one admits that the great array of facts justifies the conclusion that the poles of the earth were, since the tertiary, covered with great ice caps or sheets several thousand feet thick, and reaching down to the 40th parallel of latitude, constituting the great glacial epoch. There is a wide divergence of opinion, however, as to the origin or cause of this glacial cold. Mr. Croll, in his "Climate and Time," has formulated a theory, derived from the secular changes in the eccentricity of the earth's orbit, through which he finds a place for the glacial period; but this theory, if true, must provide for alternation of warm and cold periods at the poles throughout all geological time. Professor James Geikie of Scotland, in his "Great Ice Age," indorses this theory, and attempts to find evidences of former glacial action, not only in the tertiary, but also in mesozoic and paleozoic times. But the weight of the evidence seems to be against this theory, and Mr. Geikie himself admits that much of his "evidence" is "not very convincing."

The best and most satisfactory explanation of the warm and cold periods at the poles has been made by Professor C. B. Waring, in a paper read by him before the New York Academy of Science, and published in the *Popular Science Monthly* for July, 1886. This paper merits a much more extended notice than it has apparently received, for its author has very strongly fortified his several propositions. Briefly, his argument is this: The existence of tropical vegetables in Arctic latitudes cannot be supported upon the theory of a warm temperature only. Light was as necessary as heat; and this light must also have been uniform

and unbroken by long periods of darkness, for, if there had been a long night of four months in every year, as now, it would have been fatal to all plants, and even many or most of the animals. Therefore, down to nearly the close of the tertiary, the axis of the earth was perpendicular to the ecliptic, and the days and nights were everywhere and always equal. The temperature was kept up by means of the carbonic acid and aqueous vapor in the atmosphere, which formed a sort of "double blanket," and served to retain the heat radiated from the sun. After a long period the carbonic acid was most of it taken up from the atmosphere to form our coal-beds, peat, petroleum, graphite, etc. This process was followed by a thinning of the retaining cover. The heat from the sun was not all retained, but was lost again by escaping into stellar space. "Holes in the blanket" appeared at the poles, ice and snow began to accumulate there, and eventually the glacial epoch was inaugurated. Furthermore, he shows, that, according to the nebular hypothesis, the axes of the earth and moon ought to have been, in their normal condition, parallel with each other, and both perpendicular to the plane of the ecliptic; but instead, the earth's axis is inclined $23\frac{1}{2}^{\circ}$, while the moon's axis is practically perpendicular, it being inclined only $1^{\circ} 30'$. The change, therefore, was with that of the earth, and was effected since the moon's separation from the earth. "In view of all these facts," he says, "it seems most probable that in that blank interval the glacial epoch, or more largely between the end of the miocene and the beginning of the Champlain, that movement occurred which gave the earth seasons, unequal days and nights, and greatly enlarged its limits of inhabitability. . . . When the axis became oblique, more solar heat fell within the polar circle, those regions became warmer, and the glacial epoch departed. If these conditions — a perpendicular axis and high uplifts — could be to-day restored, the atmosphere remaining as it is, the glacial epoch would return."

It is the purpose of the present article to emphasize the reasons for believing the direction of the earth's axis was changed about the time stated above, and also to suggest the probable cause of the change. In order to do this more intelligently, we must take a more comprehensive view of the glacial epoch and all its attendant phenomena than is usually found in any one or many of the text-books, or papers, reports, and lectures, upon the subject. Of all the geological changes and revolutions in the earth, out of which has been evolved the present world of animal and plant life, the glacial epoch is certainly the most unique, and full of interest to the scientific observer. What caused the glacial cold has been the constant inquiry, but never answered, ever since it was first proposed some forty or fifty years ago. Why should corals live in security in Spitzbergen, and the red-woods of California and the cypress-trees of the southern United States flourish in the north of Greenland as late as tertiary times, where now are the almost constant rigors of an Arctic winter? What caused the recession of the glaciers, and why may we not have a recurrence of them? What influence, if any, did the polar ice-caps exert upon the ocean-level and ocean-currents? Were the ice-caps equal in magnitude; and, if not, what effects, if any, followed such inequality, from the attraction of the sun and moon upon the mass of the earth, thus abnormally distributed? These questions and kindred ones must be considered before we are prepared to comprehend the full significance and consequences of the glacial epoch.

It seems incredible that a great ice-cap, several thousand feet thick, should accumulate, and remain throughout the summer, in the temperate zones, if the ecliptic were as oblique in those times as now. The sun on the 21st of June would be nearly perpendicular to the southern limit of the glacier, and would certainly exert a powerful influence in preventing its formation or accumulation south of the northern limits of Minnesota. On the other hand, however, if we place the sun continuously perpendicular at the equator, the temperate zone would be characterized by continual spring weather similar to that occurring in April at the present time. In such case we may readily conclude that the precipitations of snow might be greater than that melted by the slanting rays of the vernal sun, and hence might continue to increase, and form a glacier of ice.

It appears that the polar ice caps in glacial times extended as far as the 40th parallel of latitude from either pole; in some places the north glacier in the United States extended as far south as the 39th, and even to the 38th parallel; and in South America Professor Agassiz found evidences of glacial action as far north as the 37th parallel. Mr. D. Forbes informed Mr. Darwin that he had seen ice-worn rocks and scratched stones at about 12,000 feet height, between 13° and 30° south latitude. There seems also some evidence of glacial action in the south-east corner of Australia. In northern Asia, owing to the great extent of land surface, it may be reasonably inferred that the southern limit of the glacier was much beyond that in the United States. The mountain-ranges in both hemispheres doubtless were covered with a much greater accumulation of snow and ice than they are at present, extending at that time to within the tropics, and perhaps to the equator. But from the whole record, we may safely assume 40° as the average limit of each, the southern being the more widely extended of the two. There are many evidences that these ice-sheets were not confined to the land, but that they crossed gulfs, seas, and even oceans. Professor H. Carvill Lewis, in a lecture published in the *Journal of the Franklin Institute* for April, 1883, says, "It probably also filled the bed of the Atlantic with ice far south of Greenland, the edge of the glacier reaching from New Foundland to southern Ireland in a concave line;" and Professor Geikie says the German Ocean was entirely filled with ice. Similar evidence has been found as to the antarctic glacier. We have therefore two magnificent circular polar ice-caps, each of them nearly 7,000 miles in diameter, and the two covering about 61,000,000 square miles of the earth's surface, leaving a zone of non-glaciated surface at the equator of about 139,000,000 square miles; so that, at the culmination of the glacial epoch, nearly one-third of the earth's surface was covered with ice.

If, now, we could ascertain the thickness of these great glaciers, we could easily estimate the amount of the earth's mass taken up in the form of aqueous vapor, transferred to the polar areas, and there deposited in the form of snow and ice. While admitting the incompleteness of the record, the weight of the evidence at present is to the effect that the antarctic glacier was much larger than the arctic. Upon general reasoning, this ought to have been true; for three-fourths of the land surface of the earth are in the northern hemisphere, and the amount of water surface in the southern and northern hemispheres respectively is in the ratio of 85 to 60. In the southern hemisphere, therefore, there ought to have been a greater amount of evaporation; and, in the absence of any known air-currents to carry this evaporation to the north of the equator, there would necessarily be a greater amount of precipitation in the southern hemisphere, and consequently a greater accumulation of ice. That such was the fact in glacial times, seems to be indicated by what is conceded to be an imperfect record. Professor Dana, in his "Manual of Geology," estimates the thickness of the northern glacier in America to have been 11,500 feet on the watershed of Canada. Professor Le Conte, in his "Elements of Geology," says, "The archæan region of Canada seems to have been . . . covered with a general ice mantle 3,000 to 6,000 feet thick;" and Professor James Geikie says the Scandinavian ice-sheet "could hardly have been less than 6,000 or 7,000 feet thick." As Norway extends nearly to the 72d parallel of north latitude, it is not probable that the northern glacier exceeded two miles in thickness at its greatest height. Professor Le Conte says, "Greenland is apparently entirely covered with an immense sheet of ice, several thousand feet thick, which moves slowly seaward, and enters the ocean through immense fiords. Judging from the immense barrier of icebergs found by Capt. Wilkes on its coast, the antarctic continent is probably even more thickly covered with ice than Greenland." Sir James Clark Ross reports having sailed for several hundred miles along a perpendicular wall of ice 180 to 200 feet high in the antarctic continent, and found only one place where the top of the ice could be seen from the mast-head of his ship; and Capts. Cook and Wilkes both confirm the report of a large ice-sheet in that part of the world. Professor Croll, in "Climate and Time," estimates, from all the data at hand, that the thickness of the southern ice-cap at its greatest height is not

less than twelve miles. It is not probable that the antarctic glacier was much, if any, higher than this in glacial times; for it will be readily understood, that, after the glaciation had proceeded so far as to place the south pole in the midst of a vast ice plain, the incoming clouds from the surrounding oceans would deposit most of their moisture before reaching the centre, and the glacier would be built up at or near its circumference. Hence we should expect to find the glacier, instead of thinning gradually from twelve miles at the centre to nothing at its outward edges, would present more the appearance of a great section of a hollow sphere of nearly uniform thickness, laid over the earth at the pole.

Further confirmation of this view is found in the fact that the southern hemisphere has a cooler mean annual temperature than the northern. Mr. Croll says this is due to the constant transference of heat to the north by means of ocean-currents, nearly all the great currents originating south of the equator; while Sir Charles Lyell thinks the true cause lies in the fact of the smaller extent of land surface in the south. It is also true that from March 20 to Sept. 22 — the duration of the sun's northern declination — there are 186 days, while from the autumnal to the vernal equinox there are only 179 days: the northern summer is therefore seven days longer than the southern summer, and the southern winter is that much longer than the northern. If this inequality in the length of the summer and winter in the two hemispheres had its origin during the glacial epoch, it would at least have the effect of melting the ice in the north more rapidly than in the southern hemisphere; and, if it existed before glacial times, the effect would have been to accelerate the growth of the southern ice-cap more rapidly than that of the northern.

At the culmination of the glacial epoch, therefore, we may assume that the northern glacier was of an average thickness of 1 mile, and in extent about 25,000,000 square miles, making 25,000,000 cubic miles of ice; that the area covered by the southern glacier was about 30,000,000 square miles, and 5 miles of average thickness, making 150,000,000 cubic miles of ice; and the two extending over more than one-fourth of the earth's surface, and aggregating 175,000,000 cubic miles of ice. These two gigantic "fossils" would be equal in size to about one-thirtieth part of the bulk of the moon, and would represent an amount of evaporation from the water surface of the earth sufficient to lower the sea-level more than 5,000 feet, or about one mile.

Now, I submit that the attraction of the sun and moon upon this mass of ice would, if continued for a long time, be sufficient to effect some change in the direction of the earth's axis. Just how much that change would be, I have not determined; but that there would be some change seems to be evident from the bare statement of the proposition. When we consider that this matter has been removed to the poles from the equatorial regions, the inequality of distribution of the earth's mass would be greatly augmented. The action and re-action of the sun and moon and the planets on the protuberant mass of matter about the equator produce what is called "nutations," and the procession of the equinoxes. Now, this mass being equally distributed around the earth like a ring at the equator, only the nutation, or nodding, of the axis is produced. But in the case of the antarctic ice-caps the result of the attraction would be somewhat different; for, this being largely at one side or at the pole, and the mean attraction of the moon being in the plane of the ecliptic, its tendency would be to draw the mass towards the ecliptic — so far, at least, until an equilibrium should be found.

That the relative magnitudes of the two polar ice-sheets should always remain the same, would hardly be presumed. The sinking of the ice to the bottom of the Northern Atlantic would necessarily cut off the Gulf Stream, and prevent its further progress northward, if it existed in preglacial times. Even if the ice extended only a few hundred feet below the surface, it would materially interfere with that current, since it is a broad shallow stream, flowing upon the top of the ocean. Similar conditions in the southern ocean might have aided the causes already named in effecting a change or changes in the relative sizes of the two great glaciers. During such changes, therefore, if any existed, oscillations of the earth's axis may have occurred before it became

fixed as at present. We should therefore expect to find pauses in the recession, and perhaps a re-advance, of the northern glacier; and such we do actually find from an examination of the great Kettle Moraine in the northern United States, and of the reindeer epoch in Europe.

As already stated, the ocean-level would be very materially lowered. Thus we can account, in part at least, for the land elevations in high latitudes, to which all geologists resort for a partial explanation of glacial phenomena. True, this lowering of the level would be co-extensive with the entire ocean surface; and the old shore-lines would be found, if discovered at all, below the present water-level. But, as Professor Dana says, "elevations of land do not leave accessible records like subsidences." One of the strongest evidences of land elevation is the existence of numerous extensive fiords, which Professor Dana says are "valleys of erosion," and which Professor Le Conte calls "half-submerged glacial valleys." But, as the ice did not exist at sea-level in low latitudes, these fiords are not found there as fossil remains to mark the degree of elevation. But we know that England was united to the continent of Europe by dry land, that the Mediterranean sea was an interlocked fresh-water lake, that the delta of the Mississippi was at least 400 feet higher than it is at present, and that many of the islands of the Pacific Ocean were at a higher level. Professor Winchell, in his "Pre-Adamites," says that probably the now sunken continent of Lemuria, in the Indian Ocean, was dry land during the glacial period, as were also some of the Malay Islands and others. Professor Le Conte says, "The boldness of the whole Pacific coast, especially in high latitudes, indicates a previous more elevated condition of the land surface [during the quaternary] than now exists;" and Mr. Darwin thinks that "at this period of extreme cold the climate under the equator at the level of the sea was about the same with that now felt there at the height of six or seven thousand feet."

Moreover, if this inequality in the amount of the accumulation at the two poles existed as intimated, it would be sufficient to remove the centre of gravity of the earth a little to the southward of its former position. This would be followed by a greater flow of water from the north polar regions; and here we would have another cause of land elevation in high northern latitudes, since lowering the water-level is equivalent to an elevation of the land. While there may have been local elevations and subsidences of the land surface in high latitudes during the glacial and Champlain periods, there seems to be strong reason for believing that the growth and decay of the two great ice-barriers added materially to such changes of level by alternately lowering and elevating the general ocean surface. This lowering of the sea-level might be taken into account in considering the question of the geographical distribution of plants and animals; but it is not my design to pursue that branch of the subject here.

The suggestion here made, that the large accumulation of the earth's mass at the south pole was one of the contributive causes of the change in the direction of the earth's axis, is but a corollary to Dr. Warring's statement, that "between the end of the miocene and the beginning of the Champlain, that movement occurred which gave the earth seasons, unequal days and nights, and greatly enlarged its limits of inhabitability."

T. A. BEREMAN.

Mount Pleasant, Io., Feb. 5.

BOOK-REVIEWS.

Hegel's Logic: a Critical Exposition. By WILLIAM T. HARRIS. Chicago, S. C. Griggs & Co. 16°. \$1.50.

WHAT Hegel calls logic is what other folks call metaphysic; and Mr. Harris has here undertaken to tell us what, as he understands it, Hegel's metaphysic is. We say "as he understands it;" for it is notorious that Hegel's disciples have not been agreed as to what his philosophy really is, some giving it a pantheistic or atheistic interpretation, while others, like Mr. Harris, think it a perfect philosophical basis for Christianity. This disagreement is partly due to the obscurity of Hegel's style, which makes it impossible in some cases to understand him, and his disciples have in this respect followed the bad example of their master. The

following passage, for instance, in Mr. Harris's work, can hardly be called intelligible: "In the category of ground, or substrate, says Hegel, 'the simple identity of essence is in immediate unity with its absolute negativity.' That is to say: Reflection posits identity and non-identity by relating to itself; its return is a self-repulsion" (p. 333). If our readers can find a meaning in that, they will do better than we can.

As regards method and doctrine, the great blunder of Hegel, as of some other Germans, consists in mistaking mere abstractions of thought for concrete realities, and this blunder is the source of most of their peculiar doctrines. Moreover, the claim put forth by Hegel and his followers, that their philosophy is all deduced from pure thought, without any elements derived from experience, is not in accordance with the facts. The idea of thought itself is derived from experience, and so is that denoted by the word "pure." Then the ideas of being, quantity, quality, relation, and others, which are essential data in Hegel's system, are obviously got by experience; and thus the claim that his philosophy is independent of experience cannot be allowed. Happily, the Hegelian philosophy is already dead in the land of its birth, and is rapidly dying elsewhere; and the feeble attempts of certain Americans to galvanize it into life again are foredoomed to failure.

AMONG THE PUBLISHERS.

THE word "croup" carries such terror with it, and is applied to so many conditions in infancy, that Dr. W. L. Carr's exhaustive article on "Croup as a Symptom in Different Diseases," in the February number of *Babyhood*, will be read with interest by thousands of young mothers. A hardly less important topic is treated by Dr. William H. Flint in his article on "The Causes of Foul Breath in Childhood," which points out clearly the origin of that annoying condition, and will be found of practical value.

"A Short Talk about Ears," by Dr. W. K. Butler, is another leading medical article. In a lighter vein are contributions on such subjects as "Spoiling a Child," "Baby's Memory," "Nursery Methods in Vienna," etc.

"Across East African Glaciers" is the title Dr. Meyer has given to his account of the first ascent of Mount Kilima Njaro, one of the most important events of recent African exploration. It will be published immediately in this country by Longmans, Green, & Co.

— We have received from the Open Court Publishing Company of Chicago a pamphlet by Alfred Binet, "On Double Consciousness," consisting of articles reprinted from the *Open Court*. The introductory chapter is on the study of experimental psychology in France, in which the author points out that the school to which he himself belongs have devoted themselves in the main to pathological psychology, or the study of the mind in abnormal states. He then takes up the various phenomena observed of late years which appear to him to show that there may be in a given individual a double consciousness, or, as he sometimes expresses it, a double personality. In support of this view, he recounts a number of curious experiments; but the reasoning by which he deduces from them his theory of double personality seems to us very incautious and inconclusive. In particular, he constantly confounds personality with consciousness, — a mistake that could not be made by any person trained in philosophy. M. Binet's experiments will interest those engaged in similar researches, but his theories should be accepted with great caution.

— Mr. Charles F. Cox read a paper before the American Folk-Lore Society in November last on "Faith-Healing in the Sixteenth and Seventeenth Centuries," which has now been issued as a pamphlet from the De Vinne Press, New York. The object of the paper is to delineate some of the older forms of what is now known as "Christian science," which were far more extravagant

Publications received at Editor's Office,
Feb. 2-7.

LANGLEY, E. M., and PHILLIPS, W. S. *The Harpur Euclid*. London, Rivingtons. 515 p. 12°. (New York, Longmans, Green, & Co. \$1.50.)
ROADWAYS and Maintenance, and Road Laws. Essays by various authors. Philadelphia, Univ. of Penn. Pr. 319 p. 8°.
TALMAGE, J. E. *Domestic Science*. Salt Lake City, Juvenile Instructor Pr. 331 p. 12°.
U. S. MARINE-HOSPITAL SERVICE, Annual Report of the Supervising Surgeon-General of the, for the year 1890. Washington, Government. 387 p. 8°.
WHITING, H. *A Short Course of Experiments in Physical Measurement*. Part II. Cambridge, John Wilson & Son. 583 p. 8°.
WHITMAN, J. M. *Constructive Steam Engineering: Embracing Engines, Pumps and Boilers, and their Accessories and Appendages*. New York, Wiley. 900 p. 8°. \$10.

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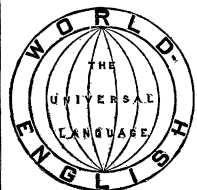
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than the form now prevalent. The author begins by remarking that "there is no absolutely new form that superstition can assume. It long ago passed its highest point of evolution, so that species of this genus do not now originate. Such varieties as occasionally seem to arise anew and flourish for a while are merely re-appearances of the ancient stock, greatly weakened in character and with a decidedly reversionary tendency." He then goes on to explain more particularly some of the magical remedies of earlier times, such as "sympathetic ointments," laying-on of hands, etc., quoting extensively from writers who believed in them as to their wonderful efficacy. The prevalence of the belief in magical cures is attributed largely to the influence of Paracelsus, who taught that "imagination is the cause of many diseases; faith is the cure for all." The passages quoted from Paracelsus and others can hardly be read without astonishment, mingled with something like disgust; and we may well rejoice with Dr. Cox that "the dark days of centuries past can never return, and that science has gained a supremacy which can never be lost."

— A very successful tableau entertainment was recently given in New York, the subjects being taken from illustrations in the current magazines. The idea is a simple one, and if the subjects are well chosen it can be made very interesting. The Century Company has prepared a list of suitable pictures with suggestions for any one who wishes to get up the entertainment. They will send it free on request.

— The course of four lectures on the electro-magnet, delivered before the Society of Arts, London, in February of 1890, by Silvanus P. Thompson, has been published in book form by the W. J. Johnston Company of this city. The volume is published with the direct sanction of the author, who has carefully revised the text; and it is the only authorized American edition. It will of necessity take its place as a standard work in the growing literature of electrical science, containing, as it does, in compact form,

every thing of value on the subject, from the earliest experiments of Sturgeon in 1825, down to the present day. The volume contains a full theoretical and practical account of the properties and peculiarities of the electro-magnet, together with complete instructions for designing magnets for any specific purpose. It is illustrated with 75 engravings, and has a very full index.

— D. C. Heath & Co., Boston, induced by the success of the Wright's "Nature Readers" for supplementary reading, will soon add to the series a "Fourth Reader." This fourth book will take up the following subjects: Section I., earth-building; Section II., the solar system; Section III. will treat of the fauna of the world up to the age of man, various discoveries of their remains will be noted, and the interesting studies of fossils and geologic formations will be detailed; Section IV. will treat of those families of living creatures that have their closest affinities with the long-vanished fauna; Section V. will discuss certain of the reptilian family; Section VI. will introduce the mammals of sea and air. The object throughout the book will be not so much to cram the pupil with ideas as to teach how to study and how to observe.

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